Application No. 10/057,983
Amendment dated January 28, 2004
Reply to Office Action of October 28, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A system for allocating a supply of a component, the system comprising:

a) a computerized database containing electronically readable information related to said component, said information describing the supply and changes to the supply, said information defining variables comprising:

ω_{CS}, ω_R, ω_M, and ω_I representing weightings for customer service, revenue, margin, and inventory for said component,

γ_{CS}, γ_R, γ_M, and γ_I representing scaling factors for customer service, revenue, margin, and inventory for said component,

x_{it} is a binary variable,

δ_{it} representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,

α_i representing a revenue associated with a demand i,

β_i representing a margin associated with said demand i,

c_j representing a standard cost of an item j,

u_{jkt} representing a quantity of consumed inventory,

t_{jk} representing a quantity of issued inventory,

I_{jt} representing an inventory of an item j at end of a time period t,

M representing a number of independent demands, and

T representing a number of time periods; and

b) a computerized supply planner that automatically produces a supply plan using synchronized allocation through an objective function:

$$\max\left[\omega_{cs}\gamma_{cs}\sum_{i=1}^{M}\sum_{t=1}^{T}\delta_{it}x_{it}+\omega_R\gamma_R\sum_{i=1}^{M}\left(\alpha_i\sum_{t=1}^{T}x_{it}\right)+\omega_M\gamma_M\sum_{t=1}^{M}\left(\beta_i\sum_{t=1}^{T}x_{it}\right)\right.$$

$$-\omega_I \gamma_I \left(\sum_{j=1}^{M} \left(c_j \sum_{t=1}^{T} I_{jt} \right) + \sum_{j=1}^{M} \left(c_j \sum_{k=1}^{T} \left(t_{jk} - \sum_{t=1}^{T} u_{jkt} \right) \right) \right) \Bigg]$$

2. (cancelled)

3. (currently amended) The system of claim 1 further comprising a **computerized** resource optimizer, wherein said resource optimizer uses **automated** matched sets logic.

4. (currently amended) The system of claim 1 further comprising a **computerized** product attribute defining tool.

5. (currently amended) The system of claim 4, wherein said **computerized** product attribute defining tool [[allows]] **that accepts engineering specification information from** a user **and** [[to]] **automatically** defines the component by using **the** [[an]] **electronically readable** engineering specification **information**.

6 (currently amended) The system of claim 1 further including a **computerized** constraint-based master planner, whereby said constraint-based master planner allows a user to **automatically** specify one or more **electronically readable** goals to be considered by the **computerized** supply planner.

7. (currently amended) The system of claim 6, wherein said goals comprise:

a [[the]] maximization of revenue,

a maximization of margin,

a maximization of inventory, or

a maximization of customer service.

8. (currently amended) The system of claim 1 further comprising a **computerized** product change analyzer, wherein said product change analyzer **automatically** compares the effects of a change **to** [[in]] the supply at different times.

9. (currently amended) The system of claim 1 further comprising a **computerized** comparer, wherein said comparer **automatically** assesses differences in **an electronically readable first** supply plan for the supply of the component and **an electronically readable second** supply plan for a modified supply of the component.

10. (currently amended) The system of claim 1 further comprising a **computerized** resource requirements planner, wherein said resource requirements planner **automatically** suggests a change in the supply to address a shortage identified by the supply planner.

11. (currently amended) The system of claim 1 further comprising a **computerized** finite resource planner wherein said finite resource planner **automatically** suggests an optimal use of the supply to address a shortage identified by the **computerized** supply planner.

12. (currently amended) The system of claim 1 further comprising a **computerized** customer promiser, wherein said **computerized** customer promiser:

automatically determines a remainder of the supply following implementation of the supply plan, and

automatically assesses [[accesses]] feasibility of a new order using on the remainder.

13. (currently amended) The system of claim 1 further comprising a[[n]] **computerized** interactive master scheduler.

14. (currently amended) The system of claim 1, wherein said database comprises **electronically readable** input data, **electronically readable** user-specified data, and **electronically readable** output data.

15. (currently amended) A method for allocating a supply of a component, the method comprising the steps of:

a) forming a database on a computer, said database containing electronically readable information related to said component, said information describing the supply and changes to the supply, said information defining variables comprising:

ω_{CS}, ω_R, ω_M, and ω_I representing weightings for customer service, revenue, margin, and inventory for said component,

γ_{CS}, γ_R, γ_M, and γ_I representing scaling factors for customer service, revenue, margin, and inventory for said component,

x_{it} is a binary variable,

δ_{it} representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,

α_i representing a revenue associated with a demand i,

β_i representing a margin associated with said demand i,

c_j representing a standard cost of an item j.

u_{jkt} representing a quantity of consumed inventory,

t_{jk} representing a quantity of issued inventory,

I_{jt} representing an inventory of an item j at end of a time period t,

M representing a number of independent demands, and

T representing a number of time periods; and

b) said computer automatically producing an electronically readable supply plan using synchronized allocation through an objective function:

$$\max\left[\omega_{cs}\gamma_{cs}\sum_{i=1}^{M}\sum_{t=1}^{T}\delta_{it}x_{it}+\omega_R\gamma_R\sum_{i=1}^{M}\left(\alpha_i\sum_{t=1}^{T}x_{it}\right)+\omega_M\gamma_M\sum_{i=1}^{M}\left(\beta_i\sum_{t=1}^{T}x_{it}\right)-\omega_I\gamma_I\left(\sum_{j=1}^{M}\left(c_j\sum_{t=1}^{T}I_{jt}\right)+\sum_{j=1}^{M}\left(c_j\sum_{k=1}^{T}\left(t_{jk}-\sum_{t=1}^{T}u_{jkt}\right)\right)\right)\right]$$

16. (currently amended) The method of claim 15, wherein said **computer** [[information]] **automatically** defines the component using an **electronically readable** engineering specification.

17. (cancelled)

18. (currently amended) The method of claim 15 further comprising the step of **computerized** optimizing **of** the supply using **automated** matched sets logic.

19. (currently amended) The method of claim 15 further comprising the step of **computerized** specifying **of** one or more goals to be considered in the step of producing a supply plan.

20. (currently amended) The method of claim 15 further comprising the steps of:

a) **computerized** modifying **of** said database to reflect a change in the supply at a first time;

b) **computerized** preparing **of** a first supply plan for said first modified database;

c) **computerized** modifying **of** said database to reflect the change in the supply at a second time;

d) **computerized** preparing **of** a second supply plan for said second modified database; and

e) **computerized** comparing **of** the effects of said first and said second supply plans.

21. (currently amended) The method of claim 15 further comprising the steps of

a) **computerized** modifying **of** said database to reflect a change in the supply;

b) **computerized** preparing **of** a modified supply plan for said modified database; and

c) **computerized** comparing **of** the effects said supply plan and said modified supply plan.

22. (currently amended) The method of claim 15 further comprising the steps of:

a) **computerized** identifying **of** a shortage in the supply created in said supply plan; and

b) **computerized** modifying **of** use of said supply to address said shortage.

23. (currently amended) The method of claim 15 further comprising the steps of:

a) **computerized** identifying a shortage in the supply created in said supply plan; and

b) **computerized** modifying said supply plan address said shortage.

24. (currently amended) The method of claim 15 further comprising the steps of

a) **computerized** determining **of** a remainder of the supply following implementation of the supply plan, and

b) **computerized** accessing **of** [[the]] feasibility of a new order using the remainder.

25. (currently amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform method steps of:

a) **said machine** forming **an electronically readable** database containing information related to a supply of a component, said information describing the supply and changes to the supply, said information defining variables comprising:

ω_{CS}, ω_R, ω_M, and ω_I representing weightings for customer service, revenue, margin, and inventory for said component,

γ_{CS}, γ_R, γ_M, and γ_I representing scaling factors for customer service, revenue, margin, and inventory for said component,

x_{it} is a binary variable,

δ_{it} representing a scaling factor to give preference for shipping orders on-time versus shipping late or early,

a_i representing a revenue associated with a demand i,

β_i representing a margin associated with said demand i,

c_j representing a standard cost of an item j,

u_{jkt} representing a quantity of consumed inventory,

t_{jk} representing a quantity of issued inventory,

I_{jt} representing an inventory of an item j at end of a time period t,

M representing a number of independent demands, and

T representing a number of time periods;

b) said machine using synchronized allocation and matched sets logic to automatically produce a supply plan for said supply through an objective function:

$$\max\left[\omega_{cs}\gamma_{cs}\sum_{i=1}^{M}\sum_{t=1}^{T}\delta_{it}x_{it}+\omega_{R}\gamma_{R}\sum_{i=1}^{M}\left(\alpha_{i}\sum_{t=1}^{T}x_{it}\right)+\omega_{M}\gamma_{M}\sum_{i=1}^{M}\left(\beta_{i}\sum_{t=1}^{T}x_{it}\right)\right.$$

$$\left.-\omega_{I}\gamma_{I}\left(\sum_{j=1}^{M}\left(c_{j}\sum_{t=1}^{T}I_{jt}\right)+\sum_{j=1}^{M}\left(c_{j}\sum_{k=1}^{T}\left(t_{jk}-\sum_{t=1}^{T}u_{jkt}\right)\right)\right)\right];$$

; and

c) said machine automatically allocating said supply using said supply plan.

26. (currently amended) The program storage device readable of claim 25, wherein the method steps performed by said program on instructions further comprise [[ing]] said machine automatically defining [[a product attribute defining tool that allows a user to define]] the component by using an engineering specification.

27. (currently amended) The program storage device readable of claim 25, wherein the performed method steps performed by said program instructions further comprise:

a) said machine automatically identifying a shortage in the supply created in said supply plan; and

b) said machine automatically modifying said supply plan to address said shortage.